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David Vance
Southern Illinois University

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Information Systems Success and Herzberg's Two Dimensional Theory of Motivation

by

David Vance, Department of Management, Southern Illinois University

The subject of Information Systems Design is a fascinating area of study because it seeks to investigate the creation of interfaces between human and machine intelligence. This is new, I think, in human history, for never before have we been tasked with cooperating with an other which shares that faculty unique to humanity: rationality. As we are still in the birthing of this union, there is no shortage of arenas for research or areas lacking in clear definition. However, as we seek to increase working interfaces between people and computers, we need to be able to mark our progress, to be able to give account of our efforts and to judge their fruitfulness. Hence we come upon the term "success" as used by contemporary authors writing about information systems projects.

For some, success is synonymous with implementation. [1,6,8]. For others, success is linked to adaptability and organizational survival [7,2]. Others simply let success be a self-defined term in the minds of systems implementers [3]. However, taken together, the picture is clear that a system can only provide adaptability which facilitates survival if that system has been implemented. So, for purposes of this paper, I will consider success of an information system to mean that it has been put into use by the intended users with a rate of usage equal to or greater than that which was foreseen by the designers and that the system is fruitfully addressing the task areas for which it was intended. That is to say that the system is providing warrantable information and that the users are aware of such and are accepting its information as an adjunct to their own cognitive faculties.

Implicit in this definition is the idea of purpose. It is impossible to discuss success without first having an idea of what the purpose or goal a system is intended to address. This lynch pin concept belongs to Herb Simon, but has recently been artfully incorporated by Walls et al in their information system design theory [9]. If we grant that an information system should have a goal or purpose and that such purpose should be firmly in mind during the design cycle, then the question becomes: At what level within the organization should this definition find its genesis?

Allen and Boynton [1] describe IS design philosophies as high road and low road. Low road design has dispersed responsibility throughout the organization. High road is a top down, centralized control. Low road leads to speed and innovation, but at the cost of efficiency, integrity and lack of organization level coherency. High road efforts are, by contrast, more efficient, have greater integrational power, but are more expensive, and may well have flexibility problems as well as the problem of lack of adoption by users whose true informational needs may not have been met. Allen et al. see a need for a balanced perspective, utilizing a mix of methods within the organization. They do not inform us as to what the criteria for structuring such a division might be.

Goodhue, et al. [6] investigated top down Strategic Data Planning and found it to be not the best way to develop Information Systems. Nonaka [8] slightly re-frames the question in her investigation. She calls the approaches inductive (bottom up) and deductive (top down) and adds a middle way called compressive (middle out?)

Earl [3] investigates IS planning and finds five models in practice; four of which are top down centralized schemes, one of which is bottom up. Although there are short comings in his methodology, he reports results that heavily favor the bottom up approach in factors labeled Competitive Advantage, Success, and Least Concerns. It should be noted that his Organizational approach involves intraorganizational communication and cooperation, so might be better understood as a middle-out approach.

Glynn [7], looking at organizational innovation, finds there is a need to link individual domain-specific intelligence to organization level context-specific intelligence in order to accomplish organizational innovation. Intelligent innovation is a factor in creating organizational success. Such innovation cannot happen without the resources available at the functional level of the organization (bottom up).

Burgelman [2] divides intraorganizational strategizing into two categories which he calls induced strategy (top down) and autonomous (bottom up). Induced strategy is like top down information systems design in that it is centralized, controlled and seeks to eliminate variation within the organization. Autonomous strategy is similarly akin to bottom up information systems design in that it is decentralized and variation creating. Not surprisingly, Burgelman finds that a balance of autonomous and induced strategies are the most likely to be successful.

The consensus seems to be that the determination of system goal being lower rather than higher in the organization seems to be a key factor in achieving system success as previously defined. Why is this?

I believe we need to view information systems as a factor in the work environment. Further, because we have had computers in the workplace for decades, I feel safe in saying that the novelty of working on or with a computer has long since faded. Computers and the information systems they entail now represent a factor of the work environment best described as company policy, procedures and work conditions. The information system embodies corporate policy as to what data is available and in what form. It creates boundaries on information which represent power structures within the organization and barriers to access. As information access and control are well-recognized factors in organizational power, these cyber-frameworks define the power structure and work environment of the information system user.

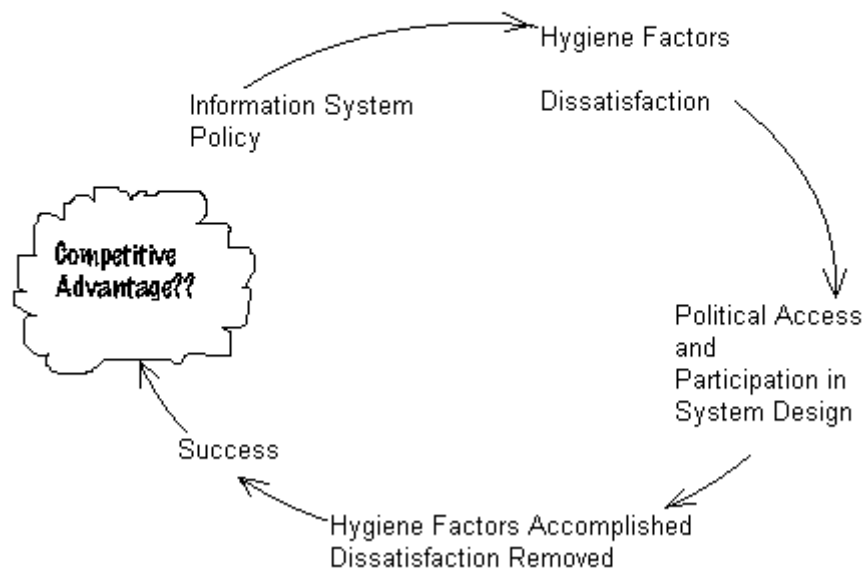
In this light it seems that information system environments must be what Herzberg would classify as a hygiene factor in the organization. Herzberg [5] believed that two entirely separate dimensions to the employee's work environment. The first, called hygiene, involves the presence or absence of job dissatisfiers such as working conditions, pay, company policies, and interpersonal relationships. The most important of these factors is policy. When hygiene factors are poor, work is dissatisfying. However, good hygiene factors simply remove the dissatisfaction; they do not in themselves cause people to become highly satisfied and motivated in their work.

The second set of factors does influence job satisfaction. Motivators are higher-level needs and include achievement, recognition, responsibility, and opportunity for growth. Herzberg believed that when motivators are absent, workers are neutral toward work, but when motivators are present, workers are highly motivated and satisfied. Hygiene factors and motivators represent two distinct factors that influence motivation.

The implication of the two-factor theory for managers is clear. Providing hygiene factors will eliminate employee dissatisfaction but will not motivate workers to high achievement levels. The manager's role is to remove dissatisfiers-that is, provide hygiene factors sufficient to meet basic needs-and then use motivators to meet higher-level needs and propel employees toward greater achievement and satisfaction.

Reflecting upon Herzberg's findings, it is my belief that information systems represent a hygiene factor in the working environment. The ramifications of this decision are significant. Information systems cannot be a source of satisfaction, but only of dissatisfaction. A poorly designed or ineffective information system will cause user dissatisfaction. Allowing users to participate in the design or re-design of an information system will allow them to remove or ameliorate the sources of their dissatisfaction. Political access is the term describing allowing a worker to gain access to existing power holders on a temporary and ad hoc basis in order to solve a particular problem. When it is present, it is a motivator and tends to make for increased satisfaction. Allowing users to assist in designing their information system is a form of political access. With the removal of the dissatisfaction comes the creation of the new information policies and procedures. This accomplishes an organizational hygiene factor which now makes worker satisfaction possible because, as stated, hygiene factors are a necessary but not sufficient condition for user satisfaction. Moving the level

of system design away from the users does two things, both important and both negative. First, it removes political access. Second, this makes it more likely that the issues that make for dissatisfaction will not be clearly understood or adequately addressed. It is, I think, trivially true that a system that does not accomplish the tasks which the users need accomplished, which does not address the sources of dissatisfaction within the work routine, will not be implemented. By definition, this will be an unsuccessful information system.



In the diagram above I have illustrated the logic thus far pursued. The box labeled "Competitive Advantage?" is cloudy or fuzzy because there is no intuitive or logical connection between an information system termed a success by the criteria presently applied and any form of organizational competitive advantage. A successful information system will not motivate users. It will not cause users to be more loyal or more productive in and of itself. It will simply move them from dissatisfaction to a neutral point where enhanced performance becomes possible. Hence, organizational performance gains must be a product of the technology within the information system by itself. It cannot rely on increased user motivation, for that will not be a product of even the most successful information system. Secondly, this means that there is some hard limit on what should be spent on the user interface of computer systems. Past the point of removing dissatisfaction, there is little reason to spend more money enhancing the man-machine interface. It may make for a prettier monitor display, but it will not enhance performance.

Complete references available upon request to David Vance at Southern Illinois University